

Remarks

Claims 1-20 are currently pending in the application. Claims 1, 4, 7, 8 and 11 have been amended. Applicant's respectfully request entry of this amendment. The following are applicant's response to issues raised in the Office Action.

Drawing Objection:

Figure 1 was objected to as having incorrect spelling for the legend, "Prior Art". A replacement figure 1 is included with this response including the legend "Prior Art" correctly spelled. Withdrawal of the drawing objection is respectfully requested.

Rejection under 35 U.S.C. 103:

Claims 1, 4, 6 and 7 were rejected under 35 U.S.C. 102(b) as being unpatentable over Plunk (US 3,815,055) in view of Wright (US 6,624,729).

Claims 2, 3, 5, 8-10 and 12-17 were rejected under 35 U.S.C. 103(a) as being unpatentable over Plunk (US 3,815,055) in view of Wright (US 6,624,729) and further in view of Gustafson (US 5,021,755).

Plunk discloses a microwave power divider. The conductors in Plunk extend all the way to the edge of the substrate.

Wright discloses a slotted ground plane for controlling the impedance of high-speed signals on a printed circuit board. Several slots are located near a trace.

Gustafson discloses a N-way signal splitter with isolated outputs.

Claim 1

Neither Plunk nor Wright teach, disclose or suggest, as in amended independent claim 1, a combiner that has circuit lines that have ends connected to input and output ports that are spaced away from an edge of the printed circuit board. The combiner further has voids that are adapted to adjust the amplitude unbalance of the combiner.

As shown in figure 2 of the present application, the ports 48A, 48B and 48C are spaced from the edge of the printed circuit board. In contrast, the device of Plunk discloses that the conductors 16, 18 and 20 extend all the way to the edge of the dielectric material in order to be connected to external terminals (see figure 1 and column 2, lines 25-35 of Plunk).

The device of Wright discloses that slots are formed in the ground plane that extend all the way through the ground plane. As shown in figure 1 of Wright, trace 16 extends through air over slots 18.

In contrast, the present invention removes the metal layer in the printed circuit board above the circuit lines of the combiner leaving non-metallized voids 52 and 54 (see page 8, lines 13-19). The circuit line is always supported by the printed circuit board material and never passes through air. Therefore, a non-metallized void is different than a slot.

Neither Plunk nor Wright teach, disclose or suggest a combiner in which the amplitude unbalance can be adjusted. There is no recitation in Plunk or Wright regarding amplitude unbalance whatsoever.

Assuming that the combination of Plunk and Wright was made, It would still fail to meet the limitations of the present invention as claimed. If the dielectric and conductors of Plunk was combined with the slots of Wright, the combination would

require the conductors to extend all the way to the edge of the dielectric and not be spaced from it. This is different from the present invention in which output ports are spaced from the edge of the circuit board.

As the court of Appeals for the Federal Circuit has set forth, even if a prior art reference could be modified to construct an applicant's invention, the modification is not obvious unless there is a suggestion in the prior art. *In re Laskowski*, 10 USPQ2d 1397, 1398 (Fed. Cir. 1989). There is no suggestion to modify Plunk to include several voids in order to adjust the amplitude unbalance of the combiner.

Dependent claims 2-7 depend from independent claim 1 and add additional patentable features and are allowable therewith. For example claim 4 recites that the circuit lines are c-shaped.

Withdrawal of the 103 rejection is respectfully requested.

Claim 8

Neither Plunk nor Wright, nor Gustafson teach, disclose or suggest, as in amended independent claim 8, a combiner that has a printed circuit board with circuit lines having input and output ports that are defined by plated through holes. The combiner is further mounted in a case and has two sets of voids that are adapted to change an electrical characteristic of the combiner. As shown in figure 2 of the present application, the ports 48A, 48B and 48C are formed by plated through holes. In contrast, the device of Plunk discloses that the conductors 16, 18 and 20 extend all the way to the edge of the dielectric material in order to be connected to external terminals (see figure 1 and column 2, lines 25-35 of Plunk). There is no disclosure of plated through holes in either Plunk or Wright.

Neither Plunk nor Wright nor Gustafson teach, disclose or suggest a combiner in which an electrical characteristic can be changed by using voids.

The device of Wright discloses that slots are formed in the ground plane that extend all the way through the ground plane. As shown in figure 1 of Wright, trace 16 extends through air over slots 18.

In contrast, the present invention removes the metal layer in the printed circuit board above the circuit lines of the combiner leaving non-metallized voids 52 and 54 (see page 8, lines 13-19). The circuit line is always supported by the printed circuit board material and never passes through air. Therefore, a non-metallized void is different than a slot.

Assuming that the combination of Plunk and Wright and Gustafson was made, It would still fail to meet the limitations of the present invention as claimed. If the dielectric and conductors of Plunk was combined with the slots of Wright, the ports would be defined by arms 16, 18 and 20. The combination would be missing the plated through holes that define the ports of the present invention. This is very different from the present invention in which the ports are defined by plated through holes.

As the court of Appeals for the Federal Circuit has set forth, even if a prior art reference could be modified to construct an applicant's invention, the modification is not obvious unless there is a suggestion in the prior art. *In re Laskowski*, 10 USPQ2d 1397, 1398 (Fed. Cir. 1989). There is no suggestion to modify Plunk to include several voids in order to adjust the amplitude unbalance of the combiner.

Dependent claims 9-17 depend from independent claim 1 and add additional patentable features and are allowable therewith. For example, claim 11 recites that the circuit lines are c-shaped.

Withdrawal of the 103 rejection is respectfully requested.

Allowable Subject Matter:

Applicants gratefully acknowledge the allowance of claims 18-20. Claim 11 was indicated as being allowable if re-written in independent form.

Conclusion:

In view of the current amendments and remarks, the claims are now believed to be in condition for allowance.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Kevin Redmond". The signature is written in a cursive, flowing style.

Kevin Redmond
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